Supporting Information

Significant Suppression of *S. aureus* Colonization on Intramedullary Ti6Al4V Implants Surface-grafted with Vancomycin-bearing Polymer Brushes

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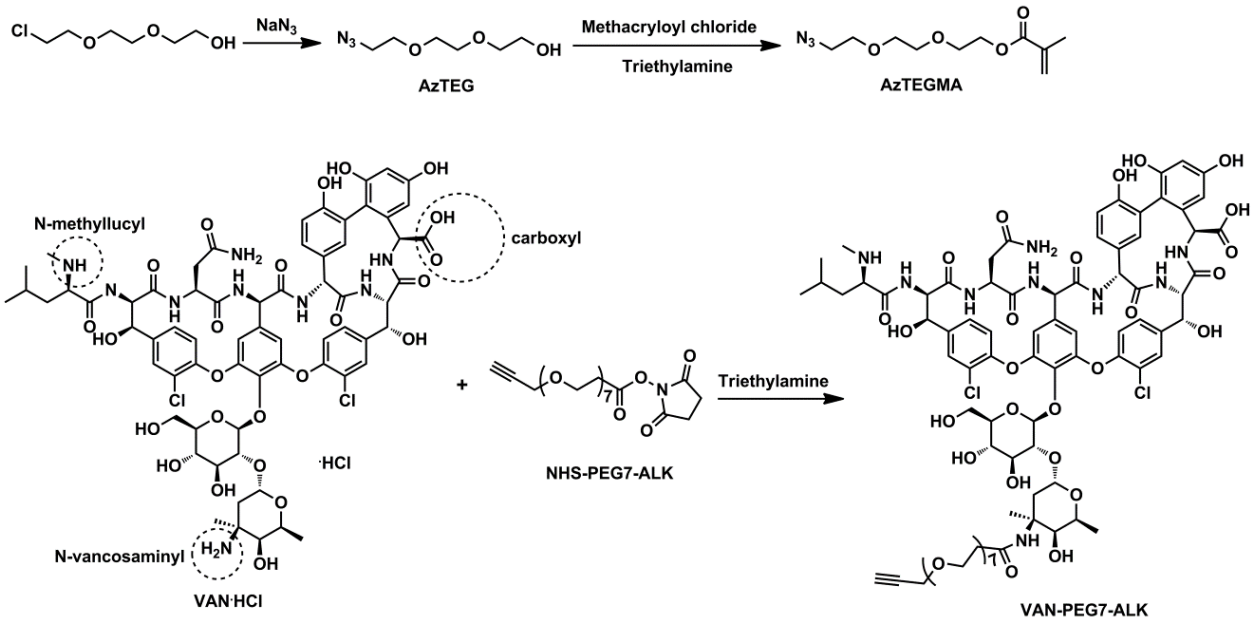
Supplementary Scheme & Figures



Scheme S1. Syntheses of AzTEGMA and VAN-PEG7-ALK.

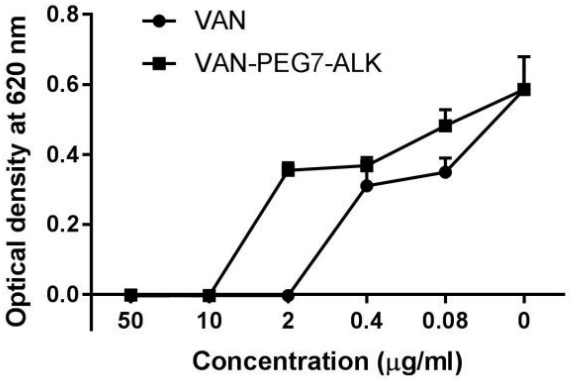


Figure S1. Determination of the minimum inhibitory concentrations of unmodified vancomycin (VAN) and VAN-PEG7-ALK against *S. aureus* (n=3). Xen-29 *S. aureus* (5000 CFU, in 20 μl) was seeded into VAN or VAN-PEG7-ALK LB broth solution (150 μl) of various concentrations, and incubated for 24 h at 37 °C under shaking (1 Hz) before the respective optical density (OD) being measured at 620 nm on a Multiskan FC Microplate Photometer (Thermo Scientific).

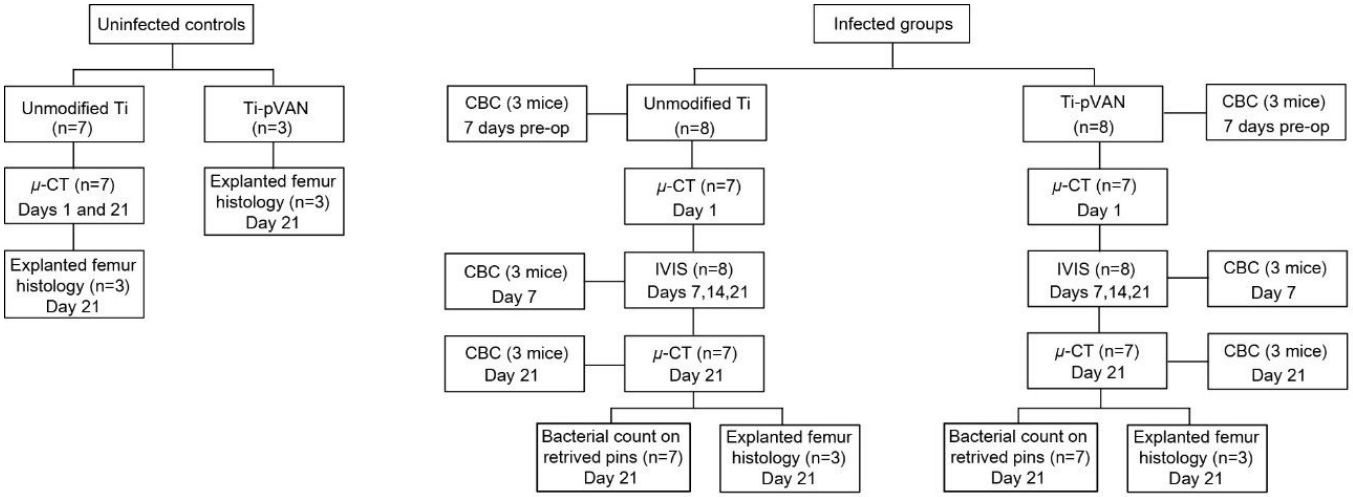


Figure S2. *In vivo* study design.

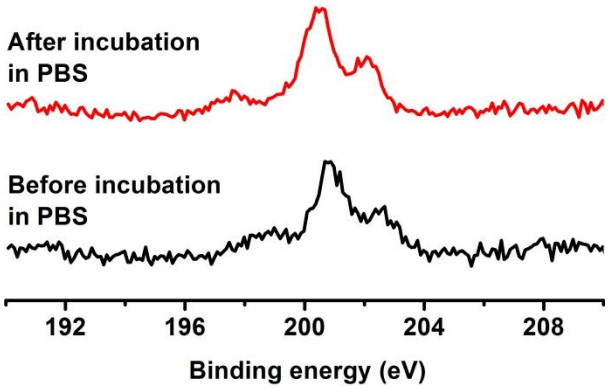


Figure S3. High resolution XPS scan of Cl2p of Ti-pVAN pin before and after incubation in PBS (pH 7.4) at 37 °C for 14 days.

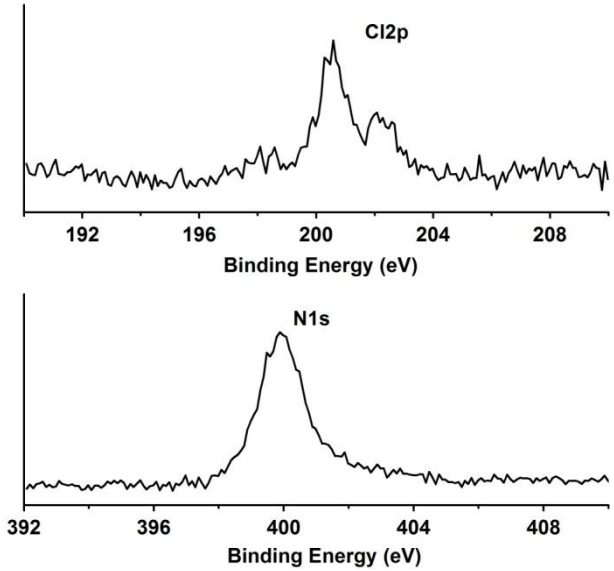


Figure S4. XPS high-resolution Cl2p and N1s scans of Ti-pVAN pin confirming successful conjugation of vancomycin via SI-ATRP and CuAAC.

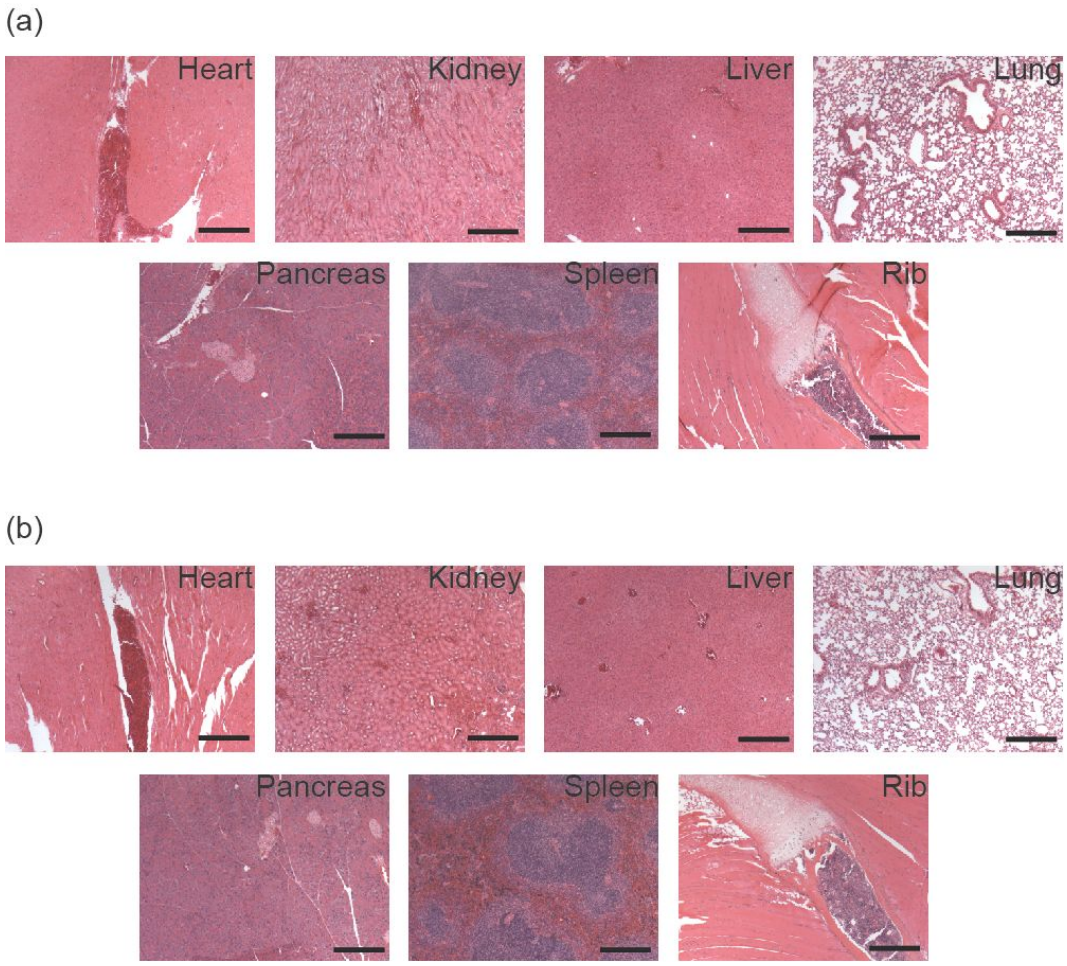


Figure S5. Representative key/scavenger organ pathology. (a) Retrieved from normal age-matched untreated control mouse; (b) Retrieved from mouse receiving Ti-pVAN IM pins in the femoral canals inoculated with 40 CFU *S. aureus* at 4 months post-surgery (n=3). Scale bars = 500 µm.

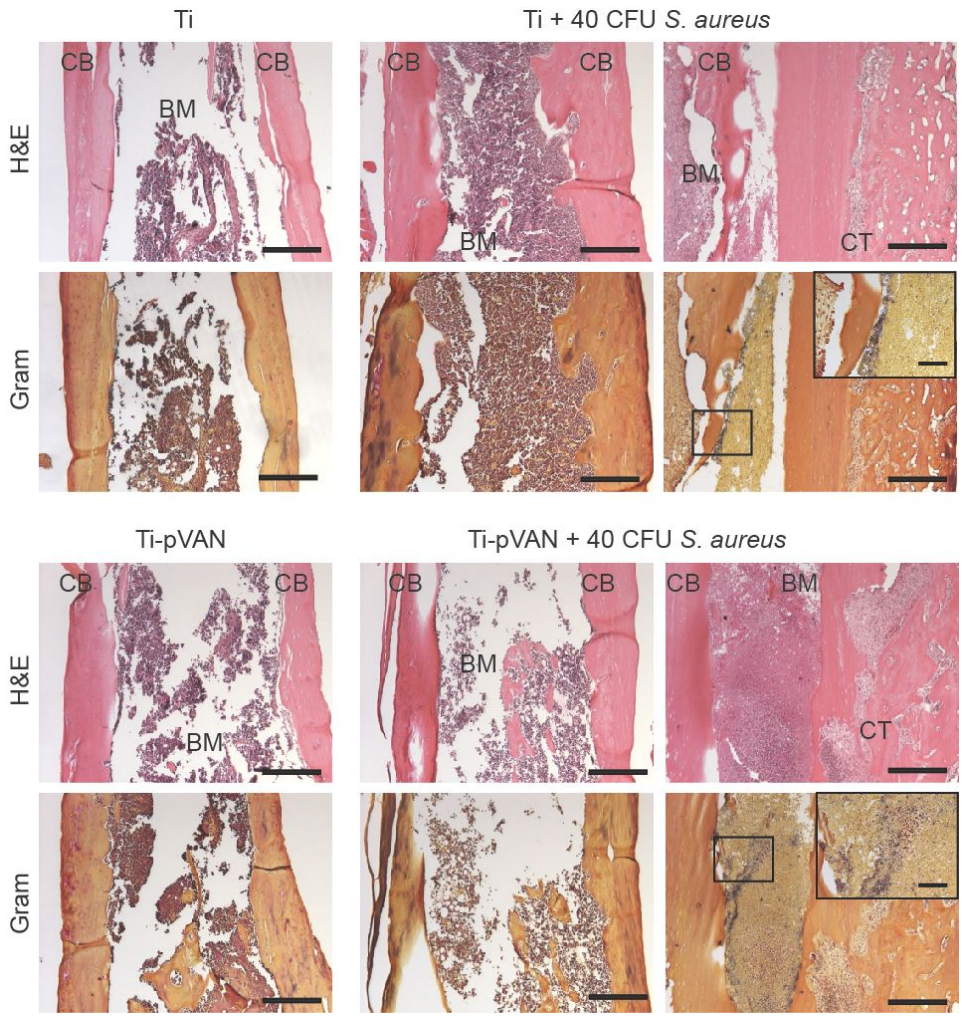


Figure S6. Representative H&E and gram staining of the explanted femur after removal of unmodified Ti6Al4V or Ti-pVAN pin, with or without 40 CFU *S. aureus,* at 21 days post-op. Scale bar = 500 μm; Inset: Scale bar = 100 μm; CB= cortical bone, BM= bone marrow, CT= cortical thickening.